Patent Claims

1. Method of manufacturing a heat shield for use in motor vehicles, consisting of an insulating material which is received between two at least partially plastically deformable plates,

characterised in that

insulating material (3), in powder and/or flake form, is applied loose to one of the two plates (1, 2) at least partially covering same,

and, at least in regions, is compacted under pressure,

and the second plate (2), in a position lying above the insulating material (3) is connected with the first plate (1) through a positive and/or non-positive connection of the plates (1, 2) in their edge regions.

2. Method according to claim 1, characterised in that, as insulating material is used mica, expanded graphite, perlite or a mica decomposition product such as vermiculite.

3. Method according to claim 2, characterised in that, the insulating material contains fillers such as sand.

4. Method according to at least one of claims 1 to 3, characterised in that, the compaction of the insulating material (3) is achieved by movement of the second plate (2) towards the first plate (1).

5. Method according to at least one of claims 1 to 4, characterised in that the compaction of the insulating material (3) is carried out with a pressing tool in at least one pressing movement.

6. Method according to claim 5, characterised in that the work is done with a stepped pressing tool.

7. Method according to one of claims 1 to 6, characterised in that, following the first compaction, a further amount of insulating material (3) is applied loose to the surface of the first plate (1), completely or in locally delimited regions, and is then compacted under the effect of pressure.

8. Method according to one of claims 1 to 7, characterised in that the compaction of the insulating material (3) is carried out in regions by means of a pressing tool provided with recesses, and/or subsequently the insulating material (3) applied in the non-compacted regions is removed.

9. Method according to one of claims 1 to 8, characterised in that the non-compacted insulating material is blown away or sucked away or removed electrostatically.

10. Method according to one of claims 1 to 9, characterised in that the insulating material (3) is applied at least in the first application via a suitable conveying and feeding device, practically evenly on the first plate (1).

11. Method according to one of claims 1 to 10, characterised in that the insulating material (3) is trickled on in the shape of a cone and is distributed by displacement with the second plate (2) or the pressing tool, proceeding from the tip of the cone (4) during the movement of the second plate (2) onto the first plate (1) towards the insulating material (3).

12. Method according to one of claims 1 to 11, characterised in that the cone (4) of material is formed in the region of the area centre of mass of the first plate (1).

13. Method according to one of claims 1 to 12, characterised in that the first plate (1) is deformed at least partially in a trough shape before the trickling-on of the insulating material (3).

14. Method according to one of claims 1 to 13, characterised in that the surface of the first plate (1) which forms the base of the cone (4) of material is provided with an inorganic binding material before the trickling-on.

15. Method according to one of claims 1 to 14, characterised in that the distribution and/or compaction of the insulating material (3) is deliberately influenced by bulges (5), beads (6) and/or webs in/on at least one of the two plates (1,2) or of a pressing tool used for the compaction.

16. Method according to one of claims 1 to 15, characterised in that the second plate (2) is connected by at least partial flanging at the edge with the first plate (1).

17. Method according to one of claims 1 to 16, characterised in that the contact pressure of the second plate (2) or of the pressing tool against the first plate (2) and the insulating material (3) are so matched to the amount of insulating material (3) that the space between the two plates (1,2) is completely filled with insulating material.

18. Method according to one of claims 1 to 17, characterised in that the heat shield is three-dimensionally deformed after the two plates (1,2) have been connected.

19. Method according to claim 1,

characterised in that regions, which may be predetermined, of the first plate (1) are electrostatically charged before the loose application of the insulating material (3),

and the insulating material (3) is removed before compaction in the non-charged regions.

20. Method according to claim 1,
characterised in that, after the loose application of the insulating material (3), insulating material is removed from the first plate (1) before compaction with a tool which is electrostatically charged in regions.

21. Heat shield produced with a method according to at least one of claims 1 to 20,

characterised in that

mica in powder and/or flake form is received as insulating material (3) between two plates (1, 2), connected to one another in a positive or non-positive manner and consisting of at least partially plastically deformable material.

22. Heat shield according to claim 21,
characterised in that at least ~~one of~~ the two plates (1, 2) is a metal.

23. Heat shield according to claim 21 or 22,
characterised in that at least one of the plates (1, 2) is provided with bulges (5), beads (6) and/or webs.

24. Heat shield according to one of claims 21 to 23,

characterised in that the surface in contact with the insulating material (3) of at least one of the two plates (1, 2) has an increased surface roughness.

25. Heat shield according to one of claims 21 to 24, characterised in that at least one of the two plates (1, 2) is provided on at least one side with a coating which reflects heat radiation.

26. Heat shield according to one of claims 21 to 25, characterised in that the plate (1,2) arranged on the side of the heat shield remote from the heat radiation is configured thicker, provided with ribs and/or consists of a material with good heat-conducting capacity.

27. Heat shield according to one of claims 21 to 26, characterised in that the thickness and/or compaction of the insulating material (3) received between the plates (1, 2) varies locally.

28. Heat shield according to one of claims 21 to 27, characterised in that regions, which may be predetermined, are kept free of insulating material (3).